

# Sheets of Engineering Economy

## Sheet (1)

### *Casting and Break – even analysis*

#### • No. 1

The sales department expected to sell 800,000 units per year of a new product. Three different methods are suggested and the cost of each is as follows:

		Method A	Method B	Method C
Gross weight	Kg/part	3	4	3.5
Net weight	Kg/part	2.5	3.5	3.1
Material Cost	Kg/part	25	25	26
Scrape Cost	L.E./ton	3	3	2.5
Production rate	L.E./ton	100	200	100
Labour Cost	Part/ton	0.3	0.2	0.15
Initial setting expenses	L.E.	12	18	6
Resetting expenses every 1200 part	L.E.	2	4	1
Special tools price	L.E.	36	12	18

General overheads 200% of labour cost, assume that special tools are depreciated on two years on two years. Choose the best method of production.

• No. 2

A company has for many years maintained the selling price of its products of 4 L.E. /unit. Increasing costs have made the manager wonder whether the historical unit sales price of L.E. 4 should be changed. Costs have increased as follows:-

- Material cost has risen from L.E 0.8 to L.E. 0.9 per unit.
- Labour cost has risen from L.E. 1.12 to L.E. 1.5 per unit.
- Variable factory overheads have risen from L.E. 0.32 to L.E. 0.4 per unit.
- Variable selling and administrative expenses have risen 25% approximately L.E. 0,04 per unit.
- Fixed overheads have increased from L.E 120,000 to L.E. 160,000 per years.
- Fixed selling and administrative expenses have risen from L.E. 40,000 to L.E. 60,000 per year.

Required :-

- a) If the company was operating at its full capacity (200,000 units per year) during the last year, how much was the annual total net profit?
- b) Determine the new break-even point, and comment on the possibility of such volume of production.
- c) By how much should the selling price be increased to break-even with the total cost at the past break-even



volume? and how much is the total annual net profit in this case if the company was still operating at its full capacity.

No. 3

A company is considering the advantages of automating a part of their production line.

The company's financial statement is shown below:-

Total sales	\$ 40,000,000
Direct labour	\$ 12,000,000
Indirect labour	\$ 2,000,000
Direct material	\$ 8,000,000
Depreciation	\$ 1,000,000
Taxes	\$ 500,000
Insurance	\$ 400,000
Sales cost	\$ <u>1,500,000</u>
Total expenses	\$ 25,400,000
Net profit	\$ 14,600,000

The above report is based on the production and sales of 100,000 units. The production manager believes that with an additional investment of \$ 5,000,000 he can reduce variable cost by 30%. The same production volume would be maintained. Using a five-year, straight line depreciation (that is \$ 1,000,000 per year), construct a break even chart. If the company expects a 20% return on its investments, should they automate?